

REPORTS on the MARINE BIOLOGY of the SUDANESE RED SEA.—IX. ALGÆ.

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[Read 5th December, 1907.]

THE following notes are the result of an examination of a small collection of Marine Algæ made by Mr. Crossland during 1904 and 1905, while engaged in investigations on the Sudan Marine Fauna, under the direction of Professor W. A. Herdman, F.R.S. Professor Herdman has handed me the collection for identification and report.

The plants were collected chiefly in the neighbourhood of Suakim and Trinkitat, and include 35 species, of which 12 belong to the Chlorophyceæ, 12 to the Phæophyceæ, and 11 to the Rhodophyceæ. In addition, 4 species of marine or brackish-water Phanerogams occur among the Algæ, and are given in an Appendix.

I am greatly indebted to Dr. M. Foslie, of Trondhjem, Dr. Reinhold, of Itzehoe, and to Mrs. Gepp for aid in identification of some of the calcareous and other forms both among the Rhodophyceæ and Chlorophyceæ, and also to the officials of the Cryptogamic Department of the Natural History Museum for aid rendered to me during a brief visit to the Museum for the purpose of identifying some of the more critical forms.

In addition to records of Algæ of the Indian Ocean and East Africa in more general works such as those of Agardh, Engler, Harvey & Sonder, &c., the following papers, dealing more especially with the forms occurring in the Red Sea and its immediate vicinity, have been consulted :—

ZANARDINI: "Plantarum in Mari Rubro hucusque collectarum enumeratio" (Mem. dell' I. R. Ist. Veneto, 1858).

PICCONI: "Contribuzioni all' Algologia Eritrea" (Nuov. Giorn. Bot. Ital. 1883).

HAUCK: "Ueber einige von J. M. Hildebrandt in Rothen Meere und in Indischen Ocean gesammelte Algen" (Hedwigia, 1886-89).

CHLOROPHYCEÆ.

1. CAULERPA RACEMOSA, *J. Ag.*, var. UVIFERA, *J. Ag.*; *Weber van Bosse, Monographie des Caulerpes (Ann. Jard. Buitenz. 1898, p. 362).*

This variety was dredged in 2-3 fathoms off Suez. It is recorded from

the Red Sea by Agardh, from Suez by Zanardini, and from the Somaliland Coast by Piccone.

2. CAULERPA PELTATA, *Lam.*, f. TYPICA; *Weber van Bosse*, in *Ann. Jard. Buitenz.* 1898, p. 375.

Collected on coral-reefs at Khor Dongola, Suez. Recorded by Zanardini, under the name of *C. chemnitzia*, var. *peltata*. It is not recorded by Piccone.

3. HALIMEDA INCRASSATA, *Lam.*, f. MONILIS, *Bart.*; *E. S. Barton*, *The Genus Halimeda*, *Monogr. lx. of the Siboga Expedition*, 1889–1900.

Dredged at 2–3 fathoms at anchorage off Suez. Recorded by Zanardini, under the name of *H. monile*, from Suez, Akaba, and Kosseir.

4. HALIMEDA OPUNTIA, *Lam.*, f. TRILOBA, *Bart.*

Collected in shallows in Suakim Harbour.

5. HALIMEDA OPUNTIA, *Lam.*

The plant here referred to seems intermediate in character between the f. *typica* and f. *cordata* of Barton's Monograph. This identification is on the authority of Dr. Reinhold.

6. AVRAINVILLEA LACERATA, *J. Ag.*

Suez Bay. Recorded from the same locality by Zanardini, under the name of *Chloroplegma sordidum*.

7. AVRAINVILLEA PAPUANA, *G. Murr. et Boodle.*

Suakim. This is a Malayan and Indian Ocean species, not recorded in any of the Red Sea lists above referred to.

8. UDOTEA ARGENTEA, *Zan.*

Mud-flats in Suez Bay. Recorded and figured by Zanardini as a new species. The present plant agrees in all respects with Zanardini's figure and description, as was pointed out to me by Mrs. Gepp.

9. DICTOSPHERIA FAVULOSA, *Decne.*

This form occurred along with sponges forming large patches on the sands at Khor Dongola. It is recorded as *Valonia favulosa*, *Ag.*, from the Red Sea by Zanardini and by Piccone.

10. CODIUM TOMENTOSUM, *Kütz.*

One small and somewhat mangled plant was found attached to *Lithophyllum affine* (34). It was unmistakably, however, *C. tomentosum*, which has been recorded by several authors from the Red Sea.

11. BRYOPSIS PLUMOSA, *Kütz.*

Suakim and Trinkitat.

12. ENTEROMORPHA COMPRESSA, *Grev.*

Suez Bay and Suakim.

PHÆOPHYCEÆ.

13. SARGASSUM DENTIFOLIUM, *J. Ag.* ; *J. G. Agardh, Spec. Sarg. Austr.* p. 101.

Dredged from Trinkitat Harbour. One of the most common *Sargassa* in the Red Sea. Recorded both by Zanardini and Piccone from Suez, Akaba, Tor, &c.

14. SARGASSUM LATIFOLIUM, *J. Ag.* ; *J. G. Agardh, l. c.* p. 103.

Dredged from 9 fathoms in Suez Bay. Recorded by Zanardini from the same locality. Hauck records a var. *zanzibarica* from the Somaliland Coast, but the present plant agrees more closely with the type itself.

15. SARGASSUM CRISPUM, *Forsk.*

Suez Bay. Recorded also by Zanardini from the same locality.

16. SARGASSUM SUBREPANDUM, *J. Ag.*

Suez Bay. Trinkitat.

17. CYSTOSEIRA MYRICA, *J. Ag.*

Several fragments referable to this species occurred in the collections. The species is described by Zanardini as "in mari rubro vulgatissima."

18. HYDROCLATHRUS CANCELLATUS, *Bory.*

Dredged from 10-12 fathoms at Khu Sinab. Recorded by Zanardini from Suez, Akaba, and Tor.

19. PADINA PAVONIA, *J. Ag.*

Suakim, Suez Bay, and one young plant from Trinkitat.

20. ZONARIA SCHIMPERI, *Kütz.*

Suez Bay. I am a little doubtful of this identification as the plant is a young one, but it agrees with the description given by Zanardini, who records it from the same locality.

21. *DICTYOTA DICHOTOMA*, *J. Ag.*

Tella Tella Kebira.

22. *SPHACELARIA RIGIDA*, *Kütz.*An epiphyte on several *Sargassa*.23. *ECTOCARPUS SILICULOSUS*, *J. Ag.*

Suez Bay, Suakim.

24. *CASTAGNEA VIRESCENS*, *Thur.*

Suez Bay. Suakim.

RHODOPHYCEÆ.

25. *LAURENCIA PINNATIFIDA*, *J. Ag.*

Suez Bay. Recorded by Portier from Hodeida.

26. *LAURENCIA DIVARICATA*, *J. Ag.*

Suez Bay. Recorded by Zanardini from Suez, and by Hauck from Madagascar and the Somaliland Coast.

27. *LAURENCIA PAPILLOSA*, *Grev.*

Suakim. Recorded also by Piccone from Massaua and the Assab Archipelago and by Hauck from the Somaliland Coast, and by Zanardini from Suez, Tor, Djedda, &c.

28. *GELIDIUM RIGIDUM*, *Grev.*

Trinkitat. Recorded from the Red Sea by Zanardini, from Massaua and the Assab Archipelago by Piccone, and by Hauck from the Zanzibar Coast.

29. *GELIDIUM CORNEUM*, *Kütz.*A form of this species occurs among the collection obtained at Trinkitat, which appears to be near Piccone's var. *ambiguum*.30. *POLYZONIA JUNGERMANNIODES*, *J. Ag.*On *Sargassum dentifolium*, but fragmentary.31. *HYPNÆA VALENTIÆ*, *J. Ag.*

Trinkitat and Suez Bay.

32. *SPYRIDIA FILAMENTOSA*, *J. Ag.*

Suez Bay. Recorded also by Zanardini from the same locality, and also from Akaba and Kosseir.

33. CORALLINA TENELLA, *Kütz.*

Suakim. This plant was identified for me by Dr. Reinhold.

34. LITHOPHYLLUM AFFINE, *Fosl.*

Suakim. Dr. Foslie informs me that this species is probably only a variety of *L. Kaiserii*, Heydr., or both may be varieties of the Pacific species *L. pallescens*, Fosl.

35. GONIOLITHON MYRIACERPON, *Fosl.*

Suakim. According to Dr. Foslie this is a variable species, and he identified the plant I sent him with a query.

APPENDIX.

The following two species of Potamogetonaceæ were also present in the collection, viz., *Cymodocea nodosa*, Aschers., and *Halophila stipulacea*, Aschers.; and also *Najas marina*, Linn. (Naiadaceæ), from Suez mud-flats. Fragments of *Salicornia fruticosa*, Linn., were also present in the same gatherings.

REPORTS ON THE MARINE BIOLOGY OF THE SUDANESE RED SEA.—X. HYDROIDA collected by Mr. C. Crossland from October 1904 to May 1905. By LAURA ROSCOE THORNELY. (Communicated by Professor W. A. HERDMAN, F.R.S., P.L.S.)

(PLATE 9.)

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THERE are 18 species in the collection belonging to 12 genera and 4 families. Of a few of these species there is a considerable quantity, but most are represented by a few colonies only and some by but one, or by a fragment of a colony. They were collected from such places as the floating stage in the Suez docks, the quay-side at Suakim, or from the sides of a floating buoy; they are growing upon seaweeds or upon each other, and some are a good deal overgrown by seaweeds. They range pretty well from north to south of the Sudan coast.